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CITY OF CHICAGO

SPECIAL PARK COMMISSION

PAMPHLET NO. 6 .∴. APRIL 1914



MILLARD AVENUE—PARKWAY PROPERLY PLANTED WITH ELMS

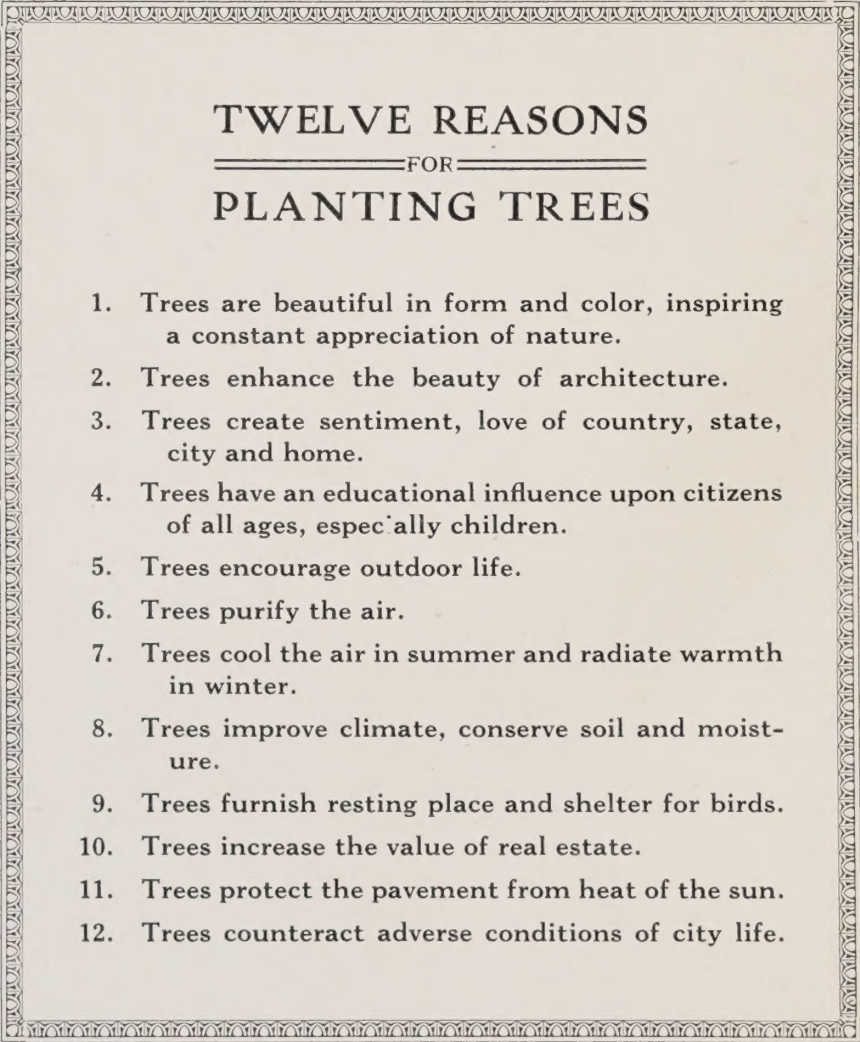
Trees and Lawns for the Streets

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JS91: Tree planting  
JS90 Chicago

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## TWELVE REASONS FOR PLANTING TREES

1. Trees are beautiful in form and color, inspiring a constant appreciation of nature.
2. Trees enhance the beauty of architecture.
3. Trees create sentiment, love of country, state, city and home.
4. Trees have an educational influence upon citizens of all ages, especially children.
5. Trees encourage outdoor life.
6. Trees purify the air.
7. Trees cool the air in summer and radiate warmth in winter.
8. Trees improve climate, conserve soil and moisture.
9. Trees furnish resting place and shelter for birds.
10. Trees increase the value of real estate.
11. Trees protect the pavement from heat of the sun.
12. Trees counteract adverse conditions of city life.

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# THE CALL FOR TREES

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Chicago's civic motto is "Urbs in Horto," which means "A City Set in a Garden." Its citizens should deserve that title by beautifying its streets and home yards with trees and shrubbery.

It is encouraging to know that Chicago has fifty or more well-organized improvement associations and many other organizations, which have co-operated in various efforts for civic betterment. All these organizations have long realized that more attention should be given to street tree planting. They appreciated the fact that the tree is not only an indispensable factor in making the city more beautiful, but a necessity and comfort and essential to an ideal residence street.

Chicago's art societies, architects and park commissioners have done much towards perfecting and beautifying the city in individual features. But all our model playgrounds, our ornate and useful parks and squares appear only in spots, with barren, treeless streets lying intermediate.

Washington is considered the most beautiful city in America. Every visitor to the capital is impressed by the prominence and grandeur of its trees. These trees form attractive backgrounds, which enhance the dignity of every statue and frame every residence in a fringe of green.

The people of Chicago are developing a finer sense for the beautiful, which finds expression in various activities. These efforts have developed a higher appreciation of beauty and art in the home and with this love for better homes comes the demand for more and better trees, which will make the home more attractive all the year.

The imagination is aroused, sentiment awakened and a keen pleasure felt when walking along a well-planted street, where the trees are uniformly trimmed and free of unsightly branches. The picture of continuous lines of trees, planted at uniform distances, all of one variety and size, inspires admiration and refinement. The graceful arches, drooping branches, dense shade flicked with sunshine appeal to the most sordid nature and inspire all to do their best.

How barren are streets without trees, what a loss to citizens and children! What a pitiable condition—no beauty, no shade, no leafy aisles, no towering forms, no arching canopies of green, no majesty, no splendor, no place of refuge for the birds, where they may nest among the branches and voice their happiness in song.

It has often been shown that trees better the health conditions of a city.

W. A. Merrill, in a bulletin issued by Cornell University, states:

"Trees add to the healthfulness of a city by cooling and purifying the air. Besides cutting off the direct and reflected rays of the sun, foliage, by evaporating large quantities of water from its surface, exercises a marked effect on the temperature. The reduction of the temperature in this way is greatest on dry, hot days when such reduction is most needed. Leaves also absorb impure and hurtful gases and manufacture the oxygen needed by humans for respiration. Circulation of the air, due to unequal temperature, is likewise promoted by trees properly pruned and arranged; while the air of basements and cellars is rendered less humid by the removal of surplus water from the surrounding soil through the medium of roots and foliage."



This appraisal of the tree as a sanitary factor is confirmed by the following resolution of the New York County Medical Society:

"Resolved, That one of the most effective means for mitigating the intense heat of the summer months and diminishing the death rate among children is the cultivation of an adequate number of trees in the streets."

Street trees help to keep the dust and bacterial impurities from being carried into the homes. The interiors of houses surrounded by trees are always less dusty than those where there are no trees in the street.

The element of the air most needed by human beings is oxygen. It is breathed into the lungs where it unites with the carbon of animal blood producing carbonic acid gas, which is exhaled in place of the oxygen inhaled. This carbonic gas is hurtful to animal life. Where it is continually given off by human life and no vegetation exists to take it up and break its parts, returning the oxygen, a dangerous condition exists. Life is at a low ebb, the difference being quickly felt by any person who has lived in the country or along a well-planted street.

Trees are inviting and encouraging to outdoor life. It is partly for this advantage that those who have the means seek homes in the suburbs and farther in the country. There they can enjoy trees in their native splendor and fill their lungs with the pure oxygen generated by the abundance of plant life.

The commercial value of the tree should appeal to those who are not touched by its civic and esthetic value. The real estate man knows that a tree-bordered street means high-class property, which grows in value with the growth of the tree.

Wherever real estate subdivisions have been opened up, trees have received almost first consideration. Even before the sidewalk is laid or the street paved, rows of trees are planted. It is discouraging to know that in most cases the trees planted by real estate companies are of the poorest varieties, those that grow fast, die soon and always look unsightly.

Some of the Eastern cities are far in advance of Chicago in street tree planting. There the ordinary residence streets are as well planted as our boulevards.

Let all forces in the city combine and help to relieve the existing barrenness of its streets, help to arouse an esthetic appreciation that will transform the city's wilderness into the actual "City Beautiful."

This can only be done after citizens and improvement associations will co-operate with this department and preserve the old tree while new ones are being planted in large numbers.



HOW TREES GROWING IN THE SIDEWALK LINE SHOULD  
BE PRESERVED

We should prevail upon the business men in semi-business sections to preserve and plant trees in the sidewalk spaces in front of their stores as is here illustrated, leaving opening of two feet around the tree trunk. These trees should add to the business capacity of these stores. A well shaded business front give a cheerful and pleasing appearance which is appreciated by all.



## Destruction of Tree Life and Preventive Remedies

There are more than 3,000 dead trees standing in the streets of Chicago at the present time. In addition there are even a larger number of trees which are partly dead and badly in need of trimming.

These stumps, dead, dying and unsightly trees standing where they meet the eye of every citizen and visitor, continually subject the city to unpleasant criticism. The cleanest and best kept streets are still unattractive and offensive where such unsightly features are seen.



EFFECT OF INSECT RAVAGES

An example of these conditions is to be seen along Flournoy street, west of St. Louis avenue, where old willows are filled with dead branches, which constantly fall and litter up the street and sidewalk, making them at times almost impassable.

### DEAD TREES

The dead trees are liable to fall at any time, especially in a windstorm, making them a source of constant danger to passerby. They also afford excellent breeding places for injurious insect and fungus pests, which multiply on these dead trees and branches, from which they are carried to the living trees, where they continue their destructive work.

### HOW TREES ARE KILLED

Various causes are responsible for the death of the trees in Chicago. In some cases the killing is due to a combination of causes. When it is considered that these militant and destructive elements, which have entered into the wholesale killing of trees, have never been thoroughly investigated, persistently attacked, no systematic remedies applied, it can readily be appreciated why some citizens have felt discouraged toward tree planting.



This lack of municipal control has permitted street trees to suffer from carelessness of citizens, who have mutilated trees by collision of vehicles, used them for hitching posts, allowing their half-fed horses to bite, gnaw and tear off the bark. The effects of such treatment is shown in Fig. A. Trees thus mutilated can hardly be saved and should be removed.

In many cases large roots have been cut off in laying curbing, sidewalks and street pavements; or in excavations for the laying of water pipes, gas mains and sewer pipes. These trees were left without properly trimming back the tops, so as to balance the loss of roots.

Another mutilation is unskillful trimming, done by men ignorant of the fundamental principles which govern the growth of a tree. This operation leaves a mere skeleton work of stubs (Fig. B) and scars. Rot spores become active upon these mutilated parts, enter the heart wood and finally destroy the whole interior structure of the tree.



FIG. B

Sometimes trees are injured by coming in contact with electric light and street car wires. These wires carry a heavy current and when electricity escapes into a tree by such contact it is sure to kill a portion of the tree.

Telegraph, telephone, electric light and street railway linemen have chopped and hacked trees almost at their own free will.

The leak of gas from mains and service pipes is a source of constant trouble and injury, depending in a degree upon the extent of the leak.

One tree which was called to the commission's attention, located at 6136 Lexington avenue, was killed in three weeks, previous to that time being in full vigor.

Trees affected by small quantities of gas will begin to die from the top and each year the quantity of dead wood will increase. Where large quantities of gas are escaping continually the tree may be defoliated in two weeks, and other trees within 100 feet may easily be affected. Whenever a tree appears to be affected in this manner it is well to investigate by digging a hole alongside the tree near the curb so as to determine whether the odor of gas is present in the soil. If gas is escaping the trouble should be reported immediately.

Boys have cut and bruised tree trunks and torn loose the bark, while careless operators have girdled tree trunks by running the lawn mower against them too vigorously. Insect and fungus diseases have also had full sway, and are treated elsewhere in this pamphlet.

Trees were often carelessly treated where buildings have been under construction, by piling building material against the trunks and tying guy wires around the trees, cutting through the bark.

Another of the more serious handicaps to tree growth and one which it is hoped may be remedied some day is the superfluous soft coal smoke and atmospheric gases, which stunt development of the best trees. A striking example of this effect is found in the condition of the trees in Grant Park on the lake front.

Trees suffer from starvation through confinement of the roots in sterile soil, by a too great or too small supply of water. They also suffer from overcrowding, improper planting, lack of plant food, freezing and old age.



FIG. A



These causes have been enumerated so that citizens may be alert to detect, report and help to better these adverse conditions. All these causes may be controlled and the trouble remedied with proper co-operation of citizens and public utility corporations with this department.

## HELP REMOVE THESE DEAD TREES

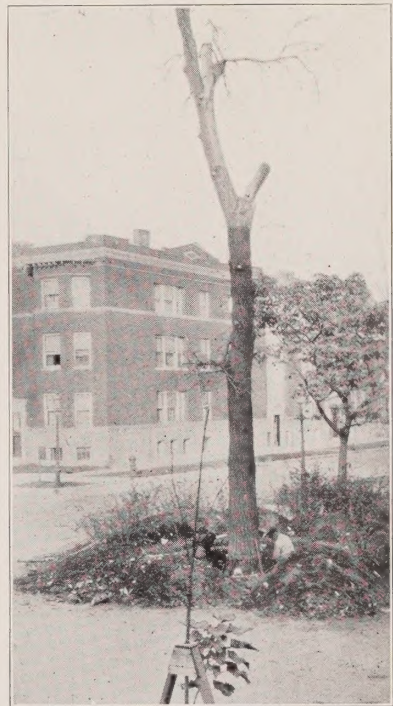
It is hoped that every citizen having a dead, dying or unsightly tree in the parkway abutting his home will read this pamphlet carefully and make up his mind to do a little co-operating each morning and evening, and take out or trim these unsightly trees. He will feel fully compensated for his trouble by the enjoyment of more sightly surroundings, besides having done something that will add to his civic pride by beautifying the city's streets.

## HOW

In removing stumps get a spade, grubhoe, a sharp ax and a strong rope. Dig the dirt away from the roots to a distance of 2 or 3 feet from the stump and to a depth of 2 or 3 feet, depending upon the size of the stump. This digging should expose all the large roots so they can be chopped off as far away from the trunk as is necessary to remove the complete root system. After the roots have been cut through, the stump should be pulled out of the hole. In case the stump is unusually large it can be pulled out by means of a block and tackle, or a team of horses. After removing the stump the hole thus made should be refilled and the parkway properly graded, so as to be in good condition for future planting.

Dead trees must be taken out carefully. It is best to use a pruning saw if available, although any carpenter's saw will do the work. Where the tree is large the heaviest branches, beginning with the topmost branch, should be cut off. Before cutting off the topmost branch one end of a strong rope should be fastened somewhere to the top of the tree. With the other end of the rope the fall of the tree may be guided, and by drawing it tight in the direction of the fall it will help to loosen the roots of the tree. After this rope has been securely fastened the larger branches should be cut off and lowered to the ground by means of a rope thrown over an upper branch, then fastened to the branch that is to be lowered and gradually lowering it to the ground by releasing the rope at the ground.

These precautions are taken to prevent any danger to passerby, or injury to street or sidewalk. The remainder of the tree is then taken out in the manner described for removing a stump. After the tree has been brought to the ground it should be cut into convenient lengths and disposed of and all dead wood and rubbish removed from the parkway.



REMOVING DEAD TREES



## HOW, WHEN AND WHAT TO TRIM

The presence of innumerable projecting stubs and dead branches are indications that such trees have been neglected and mistreated. It is as easy to trim a tree too often and too much as not to prune at all. Trimming of live branches must be done when the tree is not in sap,

preferably early in the spring, and in an intelligent way, so that the wounds thus made can heal completely during the growing season.

The cutting of dead wood from a tree may be done at any time of the year, as there is no sap flowing into the dead part of the tree. The saw should be well set and sharp in order to make the cut perfectly smooth. It is well to have some one below to warn people of any danger. Before climbing into the tree, or placing a ladder against it, size up its general conditions. The trunk of an old tree, or one that shows disease and wood destroying insects, probably has its branches in an equally unhealthy condition. Then be sure of your footing in the tree.

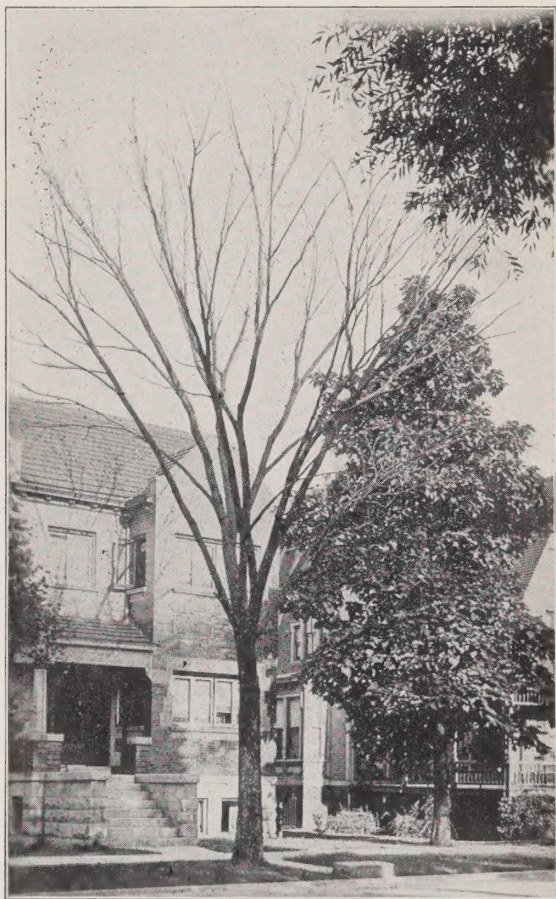
Begin by cutting out the dead branches from the top down, and if they are exceedingly large, lower them with a rope. All cuts should be made so as not to expose, either by tearing or cutting, any living part of the tree where insect and fungus diseases may develop.

To avoid such tearing, two complete cuts, or four incisions, should be made. The first one is made upward from the under side of the branch, about 1 foot out from the main trunk. This cut is made to prevent any injury to the tree by breaking

and tearing off strips of bark or wood when the branch drops off, and the second cut is then made downward from the upper side of the branch, so as to meet the cut from below. This relieves the branch of the bulk of its weight and only the stub remains.

This stub is then removed by making the third cut upward from the under side of the stub, close to and parallel with its main trunk. The last cut is made downward from the upper side, again close to and parallel with the main trunk. This completes the cut, which should be clean and smooth.

The operator should leave no part of a dead branch on the trunk. Old wood cells have no life, and therefore cannot heal.



MAGNIFICENT ELM KILLED BY GAS



## CAMBIUM

It is in the cambium that the life of a tree exists. The cambium layer is the living part of a tree, the medium through which the mineral foods are carried in solution to the leaves of the tree, and through which the digested food of the leaves is returned to all parts of the tree. The cambium is located just between the sap wood and the bark, each year forming one layer of sap wood and one layer of bark.



FIGURE D

The cambium must be carefully guarded, allowed to expand and form new tissues, which work themselves out over the wounded surface, and when properly done in time will entirely cover the wound. To get these results no ragged edges should be left and no part of the dead wood should extend beyond the surrounding cambium.



FIG. C

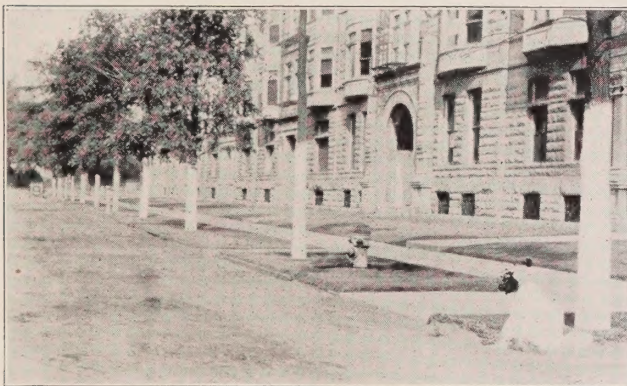
## REMEDIES APPLIED TO CUTS

Perhaps no artificial medium applied to the wound will induce it to heal more quickly, because the activity of the healing depends upon the character of the cut and the time that it is made. Protection, however, is necessary on all large wounds and should be applied as soon as the wounds are made. A large number of waxes, paints and washes have been tried, but it is found that coal tar, white lead, yellow ochre and grafting wax are about the best to protect the heart wood from attacks of rot spores while the wound is healing.

The protective substances should be applied in a thick layer and a second coat is desirable on large cuts.



FIG. E



WHITEWASHING TREE TRUNKS

## WHITEWASHING TREES

Never whitewash your tree trunks, it plugs up the evaporating pores, thus injuring the health of the tree, is very unsightly and has no beneficial qualities that I know of. It is a violation of the tree ordinance.

Trees evaporate moisture from every part of the trunk. This evaporation is going on most extensively during the hottest part of the day and aids in the growth of the tree.

By whitewashing these evaporating pores they are plugged up and circulation is stopped.



## Example of Injurious and Unsightly Trimming



TREE BUTCHERING—POPLARS

### TREE SURGERY

Tree Surgery is a profession which has grown to considerable importance, in this way sick and diseased trees are being restored to health. Briefly, tree surgery consists in cutting out the rotted parts of the trees and filling the cavities thus made with some substance which will make the cavity water and air-tight. Most of these cavities on city trees are the result of improper trimming. A stub is left where a branch has been amputated. This stub, into which the living sap no longer flows becomes saturated with moisture, rot spores become active—the stub soon rots off leaving the beginning of a pocket or cavity which is gradually increased by the action of the rot spores and boring insects. Then the birds and squirrels begin to build their nests in these cavities and help to increase them until almost the entire center of the tree trunk has been destroyed. Unless this rotting is stopped the strongest and most magnificent tree will be destroyed.



The proper way to proceed is to clean out the entire cavity, using a chisel or gouge to remove all the rotted wood. Then wash the interior of the cavity with a solution of copper-sulphate made by dissolving in a wooden vessel, one-fourth of a pound of copper-sulphate in ten gallons of water. The solution can be sprayed into the cavity by means of a small hand pump. This solution will kill all the remaining rot spore and the cavity is now ready to be filled with cement. The filling is made by using three parts of clean sharp sand to one part of cement. Fill cavity with this mortar and then bring the filling to a smooth water-tight finish, with a mortar made by using one part of sand to one part of cement.

Where the cavity is large iron rods are sometimes used to reinforce the cement. Where defects of this sort are remedied before they have spread to any considerable extent to cure is simple and certain, and gradually the annual growth of the tree will cover the filling and conceal the patch of cement beneath the new bark; but while many trees can be saved in this way, there are an equal number beyond redemption, and the best thing to do is to remove them and plant healthy young trees to take their place.

Old unsightly cripples as shown below are a detriment to the community and will never make good healthy trees. The sooner they are replaced with new and healthy trees the better.



ELM—WORTH TREATING



UNSIGHTLY AND DECREPIT



## Trees---What, When and How to Plant

Lack of municipal control and planting regulations have imposed upon the city an unnecessarily large number of trees of the same variety. The varieties which are planted in largest numbers are poplars, willows, cottonwoods, soft maples and box elders, and these are not the most desirable for permanency, beauty, shade, cleanliness and immunity from pests.

It is generally considered that the soil and climate of Chicago are not favorable to tree growth. Considering this handicap, the smoky atmosphere and other adverse conditions, it really seems that the question is not which variety is most suitable, but what kind of trees will grow at all.



LYTLE STREET, WHERE TREES WERE PLANTED LAST FALL

However, most of the trees which are considered best for city planting can be found growing in some part of Chicago. Some of them are native to this section, while many of the better varieties have not been given a thorough trial.

### OLD TREES DYING OUT

Because oaks in Chicago have been gradually dying out and other hardwood trees have not grown well in some localities is no conclusive evidence that they will not grow. It merely indicates that they have suffered from unnatural conditions and lack of proper care. The fact that they have grown and do grow is sufficient proof that they will grow under favorable conditions.

These old trees were planted in the streets before any improvements had been made, many of them, especially the oaks, being native trees. They have developed a sprawly root system, unsuited to the confinement which their roots are subjected to in the parkways. In the

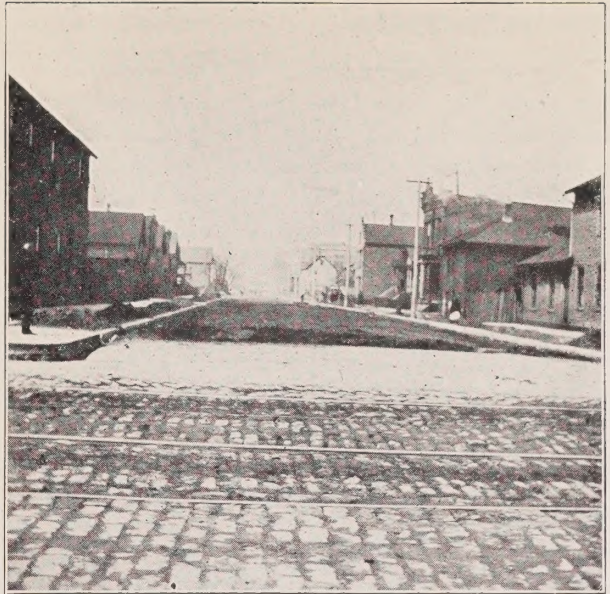


paving of streets, laying of sidewalks, excavating for buildings and the installation of sewers and drainage the roots have been cut off, drained and otherwise disturbed. Yet we see these grand old trees tenaciously struggling for existence.

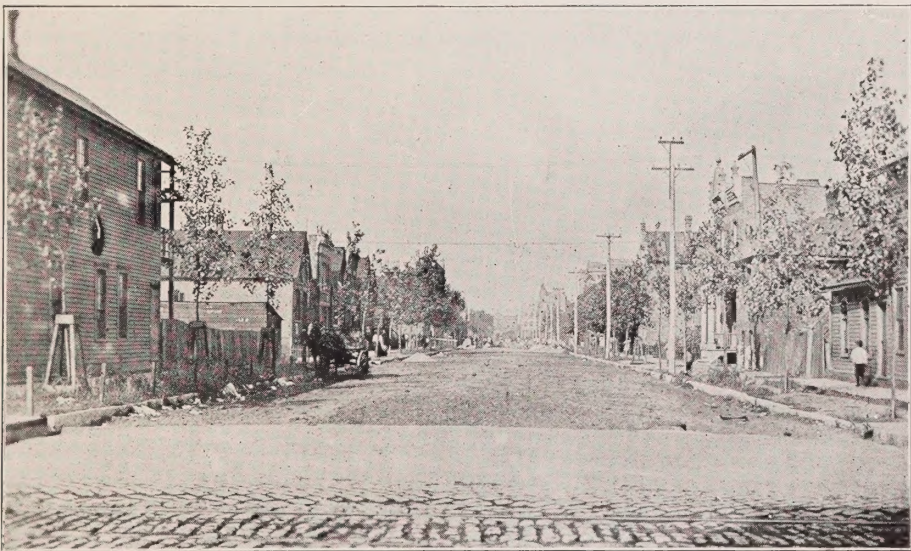
For these reasons one can feel assured that young trees of these varieties, grown in the nurseries, where they are especially developed so as to withstand these adverse conditions, are deserving of a thorough trial.

The planting of oak trees in the streets of Washington was at first an experiment. It proved successful and the authorities have been planting them ever since. They are still experimenting with other new varieties.

Sentiment and the vain desire to outdo your neighbor should not enter into the selection of trees. Citizens must not be influenced to plant a soft wood tree where a hardwood tree will grow. The choice of the tree should be governed by the best variety that



THIRTY-THIRD PLACE, BEFORE PLANTING



THIRTY-THIRD PLACE, AFTER PLANTING

is in the majority along any particular street. For example, if there are 10 Catalpas, 15 Carolina Poplars, 8 White Ash, 20 Box Elders and 10 Elms growing in a block, and it is proposed to plant two trees in front of a lot, Elms should be selected, because that is the best tree now growing on the street. All the poor trees when removed should be replaced with Elms



## SOFT WOOD TREES

The overwhelming desire to plant soft wood trees, those that grow fast, always look unsightly and die early, is entirely wrong. The planter should not think of himself alone, but plant for his children and the future. Plant trees that will stand as a growing monument to civic pride and grandeur.

Of the 4,000 trees Washington planted in 1909, 353 were Elms, 848 Pin Oaks, 637 Norway Maples, 447 Sycamores, 291 Lindens, 275 Sugar Maples, 352 Silver Maples, 104 Ginkgos, showing that Washington does not fear that these choice hardwood trees will grow too slowly for enjoyment. Washington's Carolina Poplars, Willows, Cottonwoods and Box Elders, of which the city once had a large number, are being replaced by these better trees.

## BENEFITS OF VARIETY

These figures also show that Washington attempts to keep as many different varieties of the best trees planted as will possibly grow. This not only increases the beauty of the streets and intensifies the interest, but materially helps to offset the danger of spreading insect and fungus pests.

The larger the assortment of trees the more instructive will be the planting and the opportunities for children studying the different varieties will be increased. It will also have a tendency to keep all varieties of trees at a normal price.



FIG. D—YOUNG SYCAMORES AND GUARDS, PHILADELPHIA



VIEW OF TREE BEING PLANTED CORRECTLY

## UNITY OF VARIETY

Trees planted along the same street should be of one variety, planted equal distances apart and trimmed uniformly as to form and size.

The beauty of such treatment has been referred to previously, while the practical advantages are economy in the preparation of the soil, planting, spraying, trimming and maintenance.

The distance between the trees in a street will differ according to the variety of the tree, width of the street and character of the buildings along the street. It has been shown that crowding trees along the street increases the expense of maintenance and lessens the benefits sought by street trees.

## PLANTING PLAN

As soon as the commission is given funds to employ sufficient help, a plan will be prepared which will indicate just what kind of tree is best suited for each street in the city.





FIG. A

Until such a detailed plan can be perfected the commission expects nurserymen and citizens to follow these suggestions, in order to aid in working toward the desired end.

Citizens should not try to plant the largest trees they can afford to buy. Plant smaller trees and spend the difference in good soil.

Of the 4,000 trees planted in Washington last year none was more than 2 inches in diameter, measured one foot from the ground, and the majority were only  $1\frac{1}{2}$  inches in diameter.

In Chicago the general idea is to plant nothing smaller than  $2\frac{1}{2}$  inches, while it is advisable to make that the maximum size. The advantage of the smaller trees lies in the fact that they take root quickly, readily adapt themselves to conditions, are sure to grow, develop rapidly and into better form; the cutting back does not destroy their future form, they cost less and can be replaced quickly and transplanted safely.

Large trees must be cut back severely on account of the loss of roots: they must be attended to diligently, and even then the percentage of loss in planting trees more than 3 inches in diameter is too great to warrant their planting along a city street.

The qualities which make the best street tree are ability to endure the unnatural conditions of city life, immunity from insects and fungus pests, beauty of form and color, suitable to the architecture and character of the street, shade producing quality, retention of foliage late into the fall and autumn coloring.

### NURSERY VS. FOREST GROWN TREES

Street trees should be nursery grown. No native grown tree taken from the woods will make a good street tree unless it is transplanted in the parkway as a seedling, or a tree which has been growing alone where it has had an opportunity to develop a well-arranged root and top. Under natural condi-

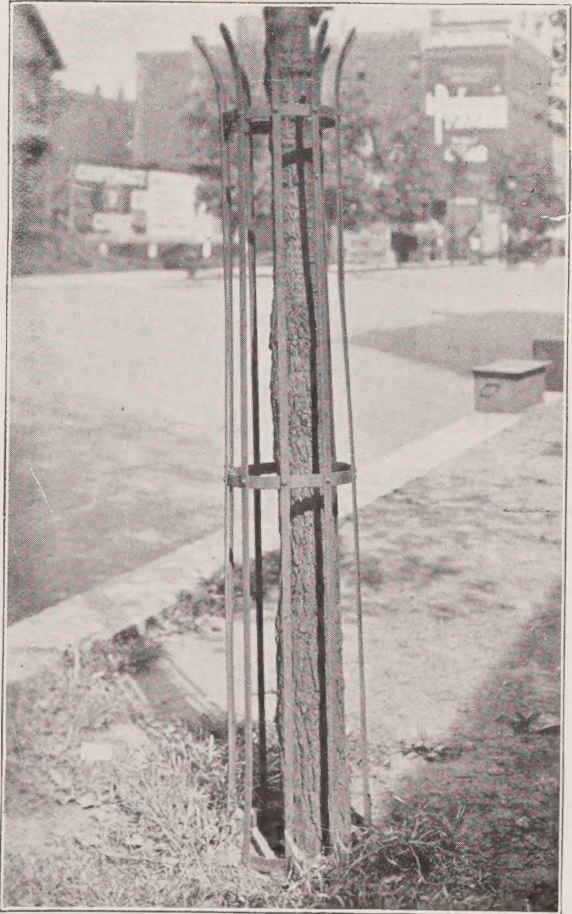


FIG. B—TREE GUARD USED BY CHICAGO PARK BOARD



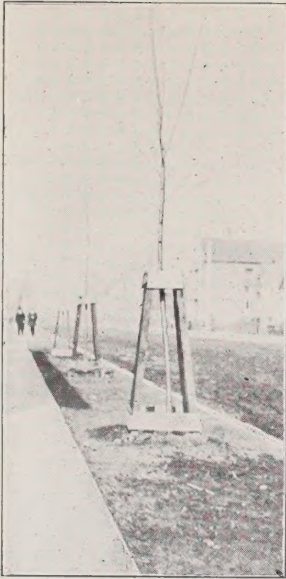


FIG. E—TREE GUARDS USED  
ON THIRTY-THIRD PLACE

tions trees grow close together and this crowding forced the development of tall slender trunks, with only a few well-developed branches at the top, while the root system grows sprawly. These trees cannot be transplanted without sacrificing a large part of the roots. This loss, together with the sparse development of branches, makes it a very undesirable street tree.

In the nursery young trees are developed in good, rich soil, transplanted from time to time so as to develop a compact, fibrous root system, which is most essential to the growth of a street tree. Such a root system permits the tree to be taken up in the nursery without any material loss of roots. It can be hauled long distances without being subjected to scraping. These roots can be protected easily from the sun by covering with canvas or blankets. After planting it will survive in the least possible quantity of good soil and moisture because its roots are confined to a small area.

### DESIRABLE FORM OF YOUNG TREES

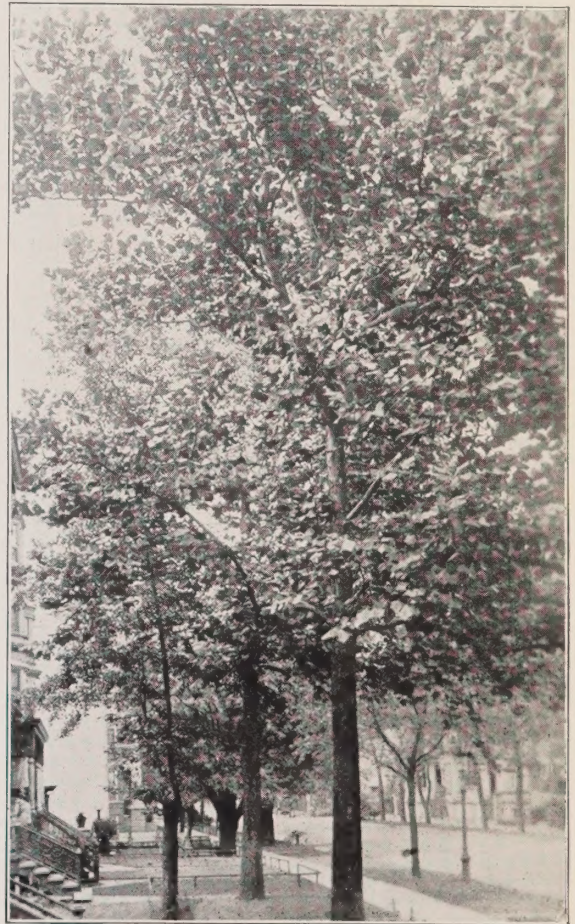
The skilled nurseryman does pruning as a corrective as well as a directive measure. He will train his young tree into a form having as well-defined central trunk running through the entire length of the tree, with side branches regularly disposed around it and subordinate to it. A tree developed in this manner will be able to withstand sudden storms and strong winds and make a sightly appearance.

Trees grown too closely in nursery rows, look like mere poles, crooked and irregularly developed, should not be used for street planting.

### THE TIME TO PLANT

Planters and nurserymen differ in their opinions as to the proper season for planting. However, trees may be safely transplanted either in the autumn after the leaves have fallen, or early in the spring, before the opening of the buds.

Local conditions slightly favor fall planting. A tree planted in the fall will



AMERICAN SYCAMORE, CHICAGO



be forced by the warm soil and cool atmosphere to develop feeding rootlets, which are of great advantage to the tree in the spring, when the weather is uncertain and variable.

## HOW TO BUY TREES

Trees should be bought just as paintings are bought. You should delegate yourself, or some one who knows something about what you should plant, to carefully inspect the plants in the nursery to see that the trees are properly grown, are in good form, typical of the variety, true to type and free of insects and fungus diseases. When delivered the trees should have a well-developed, fibrous root system and be free from mutilations.

Trees should be purchased from reliable nurserymen of good reputation. Tree peddlers should be held in suspicion.

There are in and near Chicago a number of first-class, reliable nurserymen. Their nurseries are as good, if not better, than any in the country, and in them may be seen all the varieties of trees that will grow in Chicago.

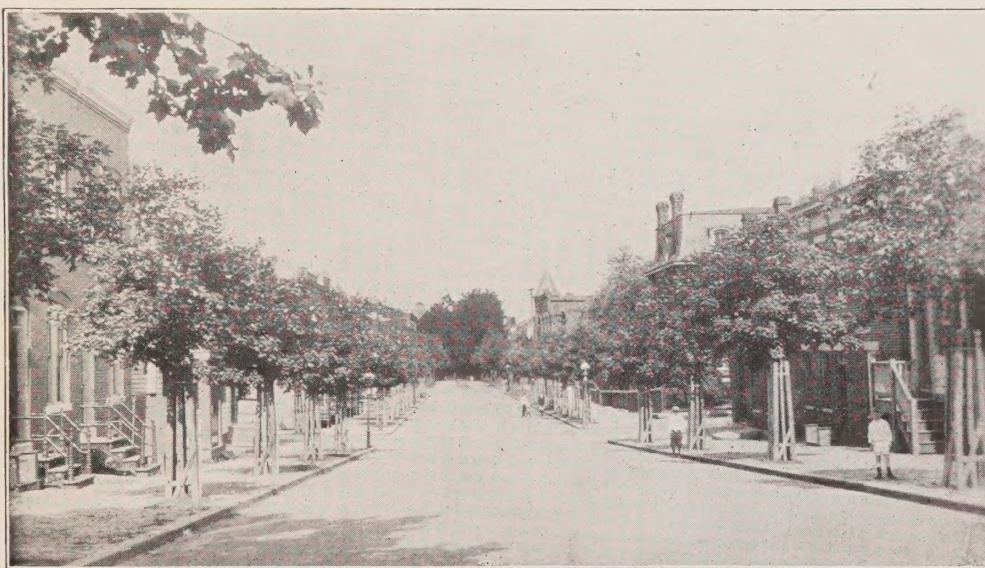


FIG. C.—VIEW OF YOUNG TREES AND GUARDS IN WASHINGTON

## PREPARING THE TREE HOLE

The hole should be made so that the tree will stand midway between the curb and the sidewalk, unless otherwise specified.

Two or three weeks before planting, the tree hole should be excavated and left open to give the ground a chance to aerate, allowing any gases to escape. The hole should be from 2 to 3 feet deep, 6 feet long and from 3 to 4 feet wide, the size depending largely upon the quality and quantity of good soil present and upon the size of the root system. These holes should be covered so as to prevent people falling into them.

## SOIL

Every young tree should have a sufficient quantity, at least one cubic yard of good soil, about its roots to start with.



Good soil is very essential to the development of a street tree. Varieties, such as Willows, Poplars, Cottonwoods and Box Elders, do fairly well in poor, undrained soil. The Catalpa and Ailanthus will endure extremes of dryness, but the best trees, Elms, Hard Maple, Sycamores, Lindens, Oaks, Locusts, etc., do best where the drainage is good, and must have good soil to make a start in.

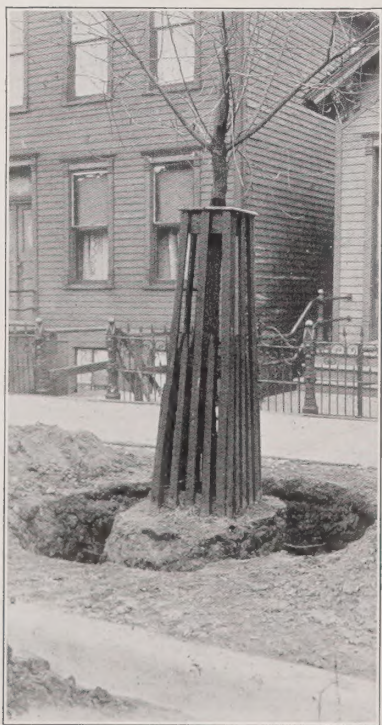
There is economy in supplying the very best soil and plenty of it. A few days before planting, the hole should be partly filled with soil and well packed and a sufficient quantity of good soil, well pulverized, free from stones, clay and lumps of sod, should be provided to be packed around the root system. Where the parkway has been filled with rubbish, the entire area between the curb and sidewalk should be replenished with good soil.

### DELIVERY OF TREE

The tree should be delivered on a cool or cloudy day, if possible, and in every case the root system should be protected from the sun and air by covering them with moist blankets or a canvas.

The tree should be free from scars, bruises and any mutilations caused by careless handling. The nursery man should trim back the top to balance the loss of the root system, remove all injured roots and branches and all side branches up to a height of 7 feet from the ground and no farther than 9 feet, making smooth cuts and covering the wounds with coal tar.

When the tree is placed in the hole its roots should have ample room to be comfortably disposed and assume their natural position. The trunk of the tree should, if possible, be so turned as to expose the same side to the north as was thus exposed in the nursery. The tree should be held by one man and worked backward and forward so as to help the other man to thoroughly pack the soil about the roots. (See. page 12.)



RENOURISHING TREE WITH NEW SOIL

### PLANTING

Ordinarily the tree should be planted as deep as it stood in the nursery, but in cases where the parkway is narrow it is better to allow the roots to develop below the curb. Care must be taken not to break or tear the fine feeders while packing the soil about the roots. The tree should be guided from all sides, so that it will stand straight and erect.

After thoroughly tamping the soil a slight basin may be formed around the tree so as to aid in retaining the moisture and the roots should be given a thorough watering.

Fresh manure should not be brought directly in contact with the roots, as its rotting has a tendency to decay the rootlets. Thorough watering does not mean slushing the soil about the roots. This treatment bakes the soil and keeps the air from the roots.

### PROTECTION

All young trees should be supported by tree guards placed around them immediately after planting.



Especially is this necessary where trees are planted along open streets where the wind has a clean sweep.

These guards also act as a protection against horses, careless drivers and mischievous boys.

A very simple support (Fig. A, page 13) can be made by using a 2x4 or a similar pole 8 feet long, driven two feet in the ground alongside the tree. To this support the tree is fastened by means of leather straps. This is a simple arrangement, but sufficient to hold the tree in place until it has become firmly established.

Perhaps the best and most economical support is shown in Fig. B (page 13), which is used by the various park commissions. Other suitable supports are shown in Fig. C (page 15), which is the type used by Washington, D. C., and Fig. D (page 12), used in Philadelphia.

Fig. E (page 14) shows a very serviceable and economic arrangement, made from 2x4 wood strips and a wire mesh placed around the trunk.

## CULTIVATION OF SOIL

During the first two or three years of growth the ground around the tree should be cultivated to a distance of three feet from the trunk of the tree.

Loosen up the top soil with a hoe, spade or rake and keep it free of weeds and grass.

A mulch of manure or leaves, if put on in the fall, is beneficial. It retains the moisture and acts as a fertilizer when spaded under.

## WATERING

During June, July and August the young trees should be given at least one, in some cases two, thorough waterings each week, depending upon the rainfall, heat and conditions of drainage.

It is a mistake to give trees a slight watering each day, or to apply a hose to the trunk and let it run for several hours at night.

The fibrous roots or feeders which take up the moisture are located away from the trunk at a distance equal to the length of its branches, and the water should be applied to these feeding roots.



A YOUNG GINKGO TREE, PITTSBURGH



## PLANT FOOD

Where trees have been planted in poor soil, look unhealthy and begin to die from the top, they are either affected by unnatural conditions or badly in need of plant food.

Where it is due to a lack of nourishment, trees may be reinvigorated by placing well-rotted manure around the tree, extending it out over the feeders. This fertilizer gives the best results when applied in the fall and where possible should be spaded into the ground early in the spring; otherwise the straw and remains of the manure should be raked off and disposed of.

Commercial fertilizers such as bone meal, wood ashes or sheep manure may be injected into the ground about the tree where it will get to the feeding roots.



RED OAKS, WASHINGTON

## TREES WHICH ARE MOST DESIRABLE

Following is a list of the best city street trees:

**AMERICAN ELM**—In localities where the soil and atmospheric conditions are good this tree should be planted 50 feet apart and in less favorable localities 40 feet apart. This tall stately tree, with its strong, heavy arching branches, should be confined to wide streets. Its leaves and twigs are delightfully delicate and its winter form is graceful and attractive.

It grows rapidly in rich, well-drained soil and needs plenty of moisture. Chicago's Elms are being attacked by the tent caterpillar, Tussock moth and several scale insects. Steps must be taken to control these pests if the Elms are to be properly preserved.

**SUGAR OR HARD MAPLE**—This is a hardwood tree not readily susceptible to insect and fungus diseases, therefore an exceedingly good street tree. It develops a dense, dignified top, grows quite rapidly in good soil, does not thrive on heavy clay. They should be planted 40 feet apart along the street.

**SILVER MAPLE**—This is a rapid grower, with slender branches, and should be used only on wide streets, planted 40 feet apart. It grows in almost any soil, but does best in rich,



moist soil. Being a soft wood tree it is unable to withstand wind and snow storms and is susceptible to insect and fungus diseases.

A few years ago the cottony maple scale seriously damaged this tree and is apt to reappear from time to time. For these reasons this tree must be planted sparingly.

**NORWAY MAPLE**—This tree resembles the Sugar Maple in appearance. It is one of the best Maples for street planting and should be planted about 40 feet apart. It develops a dense spreading head and a deep root system, requires very little care and would do better were it not for the smoky atmosphere and clay soil of Chicago.

**WHITE ASH**—A tree suitable for streets of medium width, planted 40 feet apart. It is a rapid grower, develops a good root system and will thrive in rather poor soil. But it becomes straggly, drops its leaves badly during the summer, is attacked by borers and scale insects, and lacks grace of form during the winter.

**AMERICAN AND ORIENTAL SYCAMORE**—These two plane trees are beautiful, majestic street trees where they can be grown successfully. The American is the taller and the Oriental the broader of the two. They are both rugged in appearance and especially suited for planting along broad avenues.

The Oriental is the better Sycamore for smoky localities, were it hardy. Its bark is shed annually in a characteristic manner during the latter part of the summer, thereby throwing off its old soot-covered surface. This exposure of the new bark, however, has a tendency to weaken the tree, and subject it to freezing and cracking. In the West and South parks these trees have been killed out by winter freezing.



CAROLINA POPLARS—PLANTED TOO CLOSE—ARE TOO TALL

**AMERICAN LINDEN OR BASSWOOD—EUROPEAN LINDEN**—These are both stately trees, grow rapidly and form a round head of dense foliage. The American variety is better adapted for local purposes, has large leaves and should be planted 40 feet apart.

The European species has smaller leaves and is somewhat smaller tree, grows very slow and is unreliable.

The American Linden seems to be more seriously affected by caterpillars than any other shade trees. In Chicago hundreds of them were found entirely defoliated by the Tussock moth this year.

**PIN OAK**—This is a suitable tree for streets of medium width and should be planted 40 feet apart. It is a handsome tree, forms a pyramidal head, with rather short, spreading branches. Its growth is slow at first, but soon keeps pace with what are considered much faster growing trees. This oak is rapidly coming into popularity in the eastern cities, but with its growth is questionable, as it is not hardy.



**RED OAK**—This is a native tree in this locality. Like the Pin Oak, it is strong, durable, beautiful in form and autumn coloring, and is beset by few enemies. Its spreading branches form a broad, round, symmetrical head. It should be planted 40 feet apart.

A popular notion prevails that these Oaks grow too slowly. In Washington they have grown as fast and even faster than many of the other street trees. These trees should be given a thorough trial in Chicago.

**HONEY LOCUSTS**—The Locust makes a fine street tree. It grows rapidly, is suitable for a narrow street and should be planted 35 to 40 feet apart. It forms a graceful, rather loose head, with delicate pinnage foliage. The trees are vigorous and grow in almost any soil.

**AILANTHUS**—This is termed the "Tree of Heaven" and also the "Scavenger Tree." It grows in the most barren soil and in the worst smoke and dust. Planted on sand, it becomes a tree, but on clay it remains a shrub. Wherever nothing else will grow try an Ailanthus. Two objections are raised against it—its obnoxious odor and its habit of sprouting badly from the roots. The odor is confined to the male form and can be avoided by planting the female form. The second objection can be overcome by keeping all the young shoots back at the ground.

**HACKBERRY**—This tree looks like and is related to the Elm. It is very shapely, grows rather rapidly and has a good, strong form, but it is attacked by borers and fungus diseases. It should be planted 40 feet apart on streets of medium width.



USELESS TREE BANDING

#### **CATALPA SPECIOSA**—

This is a suitable tree for narrow streets, planted 30 feet apart. It grows rapidly, has a picturesque spreading head and large foliage. Its gigantic leaves are readily attacked by fungus diseases and drop badly during the summer. They should be confined to the desert sections.

**HORSE CHESTNUT**—This is a popular street tree in European cities, but here it does not develop into its best form. It is not a long lived tree, and is badly infested with leaf-eating insects—red spider and mildew. Like the Catalpa, it has a beautiful flower, which makes it an excellent tree for lawn and garden. It loses its foliage early.

**POPLARS**—There are a number of varieties, principally the Lombardy Poplar, Balsam Poplar, Certinensis Poplar, Black Poplar, Aspen, Large-Toothed Poplar, Silver Bolles Poplar and Carolina Poplar.

Of these, the Certinensis, Carolina and Black Poplar are the best for street planting. They should be planted 30 feet apart, confined to narrow streets in localities where the soil and atmospheric conditions are poor. They are rapid growers and thrive in almost any soil. They serve best when planted for temporary effect, between the slower growing trees, and with a view of removing them later. The Poplars give streets a look of cheapness; they are short lived; shed their leaves during the summer and drop them early in the fall.



**GINKGO OR MAIDENHAIR TREE**—This is a Japanese tree. They may be seen growing on the streets in Boston, Washington and Pittsburgh and certainly are worth trying in Chicago. It grows very slow, makes an ideal tree for narrow streets when properly trimmed and should be planted about 25 feet apart in sandy or gravelly soil. It is without enemies of any kind and even the horses refuse to chew its bark.

## UNDESIRABLE TREES

**WILLOWS**—This genus of tree has some sixty or more species and has been very useful as a sanitary and economical tree, but it is entirely unsuited for planting along residence streets. However, it may be used to good advantage as a screen against elevated railroad structures, in unsightly yards and manufacturing plants and as wind breaks.

The wood is tender and the trees are often attacked by insects, especially the Tussock moth, which destroys its foliage.

**COTTONWOOD**—There are two varieties of this tree—the pistillate tree, which fills the air with cottony floats when shedding its seed, and the staminate tree, the form which produces no cotton. The former should never be planted. Its planting is prohibited by law in several eastern states. The latter makes a picturesque tree for landscape planting, but grows too fast and too large for a street tree.

**BOX ELDER**—This is a large rapid grower, rather straggly and therefore unsightly. Its twigs die readily and the tree is badly infested by insects. Altogether it is a very poor street tree.



LABORERS—TRIMMING

## The Best Trees for Street Planting

### Those Thoroughly Tried:

American Elm  
Norway Maple  
Honey Locust  
Hackberry

Carolina Poplar  
Hard Maple  
White Ash

American Linden  
Catalpa  
Ailanthus

### Those Tried and Found Questionable:

European Sycamore  
Red Oak

Pin Oak  
Ginkgo

American Sycamore

### Trees Which are Best for Sections Where the Soil and Atmosphere are Poor:

Carolina Poplars  
Ailanthus

Catalpa

Certinensis Poplars

### Trees Which Should not be Planted at all in the Streets:

Cottonwoods

Willows

Box Elders



## A Few Pointers

1. Trees are best when nursery grown.
2. Trees transplanted from the woods should be seedlings.
3. A tree two inches in diameter measured one foot from the ground is large enough.
4. Trees should have a compact root system, straight main trunk and well-balanced top.
5. The lower branches should be trimmed to a height of 7 feet from the ground.
6. Trees should be free of fungus and insect diseases.
7. Tree holes should be larger than required by the root system.
8. Trees should be planted with as large a root system as possible.
9. Prevent drying, sunburn or freezing of exposed roots.
10. Plant the tree at the same depth and exposure as it formerly stood.
11. Trim off all torn and broken roots and branches before planting with sharp pruner.
12. Plant no trees closer than 25 feet.
13. Arrange the roots to spread naturally in loose soil.
14. Tramp the soil well about the roots.
15. Water the young tree freely, especially during June, July and August, with one or two thorough waterings each week.
16. Keep the soil cultivated around young trees.
17. A serviceable and strong tree guard should be placed around the tree.



CEMENT STUMP—RESULT OF POOR TREE WORK

## HOW TO MAKE A LAWN IN THE PARKWAY

If we are to have beautiful streets, we must also give our lawns in the parkway proper attention.

Every citizen ought to help beautify his community by planting grass seed to cover all the bare spots in the parkways along the street in front of his residence, flat buildings or cottage. Good lawns give the neighborhood a neat and clean appearance and better the sanitary conditions.

In seeding a piece of newly made parkway it should first be carefully spaded up, all the lumps and rough earth broken and a smooth surface made with an iron garden rake.

Apply a good dressing of pulverized sheep manure then sow the seed. This must be done early, so that the grass will get a good start before the dry weather sets in.

The best grass for city lawns is June grass (also called Kentucky blue grass), red top and white clover; the mixture is made by using June grass 60 per cent, red top 35 per cent, and white clover 5 per cent. The white clover is added because it forms a comparatively large leaf, which shades the other grass from the heat of the sun. This must be sown at the rate of one quart of mixture to 400 square feet of ground. After the seed has been sown uniformly over the ground the area should be rolled with a light hand roller.



Attention should be given your lawn every spring. We all admire perfect, velvety lawns, and they are something all can have if you will get out and repair them every spring, at this time the lawn should be thoroughly rolled, so as to force the roots to grow farther down into the soil.

Wherever the grass has died out, stir or scratch the soil with an iron rake, or spade up the area and spread fine garden soil over it. Then add the seed at the rate of one pint to 400 square feet of ground and roll slightly.

Slight hollows or depressions may be filled with garden soil in case the sinking is very slight. If more than two inches, the sod may be taken up and soil thrown underneath, the sod then replaced. After the sod has been replaced it must be pounded down or rolled into place.

The best lawns are fertilized each year. A heavy covering of well rotted stable manure, put on in the fall, is good, and this must be raked off early in the spring. The best commercial fertilizer, one which contains all the chemical foods essential to the growth of a good lawn grass, is dried sheep manure, which can be purchased commercially and should be applied at the rate of about five pounds to 400 square feet of lawn.

Nitrate of soda also makes a good fertilizer and is soluble in water, so that it readily becomes converted into plant food, which is taken up by the grass immediately.

These fertilizers should be applied just before a rain so that they may be washed into the ground thoroughly. They should not be applied in hot weather as there is danger of burning the grass. A mixture of equal parts of bone meal and wood ashes applied at the rate of six pounds to 500 square feet is also recommended. These fertilizers are not readily soluble and will become available immediately as plant food.

One of the serious problems in making and maintaining a lawn is keeping out the weeds. If your lawn is always kept in good condition, so that the grass is thick and heavy, the weeds will find it very difficult to get a start. Poor lawns encourage weeds, and after they have started it is a discouraging task to rid yourself of them. If every one in the neighborhood will assist, each a little, the benefits will soon be apparent. Dandelions and plaintains are the most serious offenders. The surest way is to dig them out with a knife. Jab an old table knife into the ground against the root and cut it off. Then, to make sure of the job, take a little grain of copper sulphite and put it on the root, leaving it to dissolve. It will kill the entire root left in the ground. Salt brine, iron sulphate, or kerosene oil when injected into the roots of these weeds will also kill them.

The watering of a lawn is a serious problem. About three thorough waterings each week during the hottest weather are sufficient for any lawn and at these times the water should be applied heavily, so that the roots of the grass will be encouraged to grow further into the soil. Slight surface waterings keep the roots close up to the surface, and by neglecting the watering in hot weather the sun will burn up the tender roots.

The proper cutting of a lawn ought to be considered a pleasant exercise. Lawn grass should not be cut too short, that is, not closer than two inches, neither should it be left to grow longer than four inches.

Keep your grass within these limits if possible, for the best results. Some prefer to leave the clipped grass on the lawn so that the sun may dry the cuttings and they are then washed into the soil, where they are again converted into plant food. This is a good idea, when the clippings are short. Long clippings would look unsightly, being too large to wash into the soil.



Frequent rolling after a heavy rain is always beneficial. A very cheap and simple way of making a roller is to take a two-foot sewer tile, knock off the flange, and build a frame work inside of it, to which a handle is added.

## Insects---How to Kill Them

In treating insects we divide them into three classes in respect to their manner of taking food—the chewing, sucking and boring insects.

The biting or chewing insects are those which actually masticate and swallow their food, and include the majority of the injurious larvae, many beetles and locusts; as the Tussock moth, cabbage, currant and potato worms. To combat these insects we must use direct poisons, as the arsenicals, which must be put on the food these insects eat, so that it will be swallowed with the food.

The sucking insects are those which injure by, gradual extraction of the juice from the bark leaves or fruit; these are the plant bug, plant lice, scale insects, thrips and mites. For this class it is necessary to use substances which will act externally on the bodies as a caustic, or to smother or stifle them by clothing the breathing pores, or fill the air about them with poisonous fumes.

The boring insects are those which work in the heart or hardwood of the trees, as the willow and poplar borers. They are the larvae of beetles and are combated by injecting carbon bisulphide into the holes made by these insects. They may also be killed by poking stiff iron wires into the holes and in this way crush the larvae.

It might be interesting for you to know that there is another classification of insects based on the mode of nourishment, those amenable to similar remedial treatment, as follows:

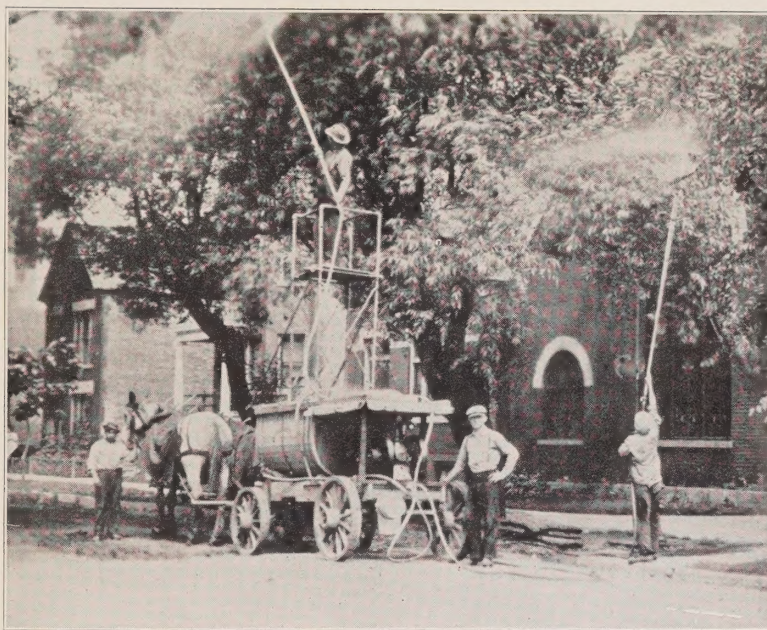
1. External feeders—Biting insects, sucking insects.
2. Internal feeders—Borers.
3. Subterranean insects—June bug.
4. Insects affecting stored products.
5. Household pests.
6. Animal parasites.

Insects probably troubled cultivators from the time plants were first grown, and from the beginning the cultivators used different materials to combat them. Some of these were vinegar, soap, soot, lime, turpentine, hellebore, paints, oils, sulphur, ashes, sand, ground bones, whale oil, flax, rubbish, sea weed, mortar rubbish, clay, tobacco water, powdered dust, and other materials too numerous to mention.



WILLOW—DECREPIT—WORTHLESS





SPRAYING TREES

In recent years we have done away with all quack remedies, and I will mention other insecticides which are recognized by all horticulturists and will classify them according to the way in which they cause the death of insects.

**Internal Poisons:**

Scheele's green  
Paris green  
London purple  
Hellebore  
Green arsenold  
Pink arsenold  
Laurel Green  
Arsenate of lead  
Disperne.

**Home-made Remedies:**

Taft's arsenite of lime  
Arsenate of lead  
Kedzie's arsenite of soda  
Arsenite of lead

**Contact Remedies:**

Tobacco  
Pyrethrium

**Contact Remedies—Cont.**

Kerosene emulsion  
Whale oil soap  
Lime, sulphur and salt  
Lime and sulphur  
Hydrocyanic acid gas  
Carbon bisulphide  
Limoid  
Slug-shot

You no doubt know the red spider, which, truly speaking, is a mite; the mealy bugs and the different scale insects so common on the house plants. All these may be controlled by diligent use of water and the nozzle. Tobacco is good in combating plant lice. The stems should be dampened and then burned in a room where the plants are put. Kerosene emulsion can be used on the more hardy plants in getting rid of the scale insects, but must be used carefully. (I refer to this later). Whale oil soap is good when the best quality of soap is obtainable. Hydrocyanic acid gas is sometimes used in the greenhouse when scale insects are extremely plentiful, but no amateur can afford to use this insecticide, as it is a deadly poison. Sulphur is often used with good success.



## THE TUSSOCK MOTH AND SUGGESTIONS FOR ITS EXTERMINATION

Numerous inquiries and complaints have been received by the Special Park Commission relative to the ravages of the larvae or caterpillars of the White Marked Tussock Moth (*Orgyia leucostigma*). These inquiries have suggested the publication of this bulletin, describing the life history of this insect, its destructive activities and suggestions for its extermination. Citizens and Improvement Associations are urged to carry on a continual warfare against this pest, destroying it in any form wherever found.



FIG. E

changes from the larvae to the pupa stage and from the pupa to the adult stage.

The male adult (see Fig. C) is a brown colored moth with two pairs of wings, while the female (see Fig. D) is a slug-like moth without wings. Soon after emerging from the pupae the female crawls upon her cocoon and after mating she deposits her eggs on the empty cocoons, covering them with a conspicuous mass of white frothy wax (see Fig. A, also Fig. E).

The eggs remain dormant during the winter and begin to hatch the following spring, about the latter part of May and June.

When the larvae of this insect is fully developed it is one of the most beautiful of our caterpillars, being characteristic in appearance (see Fig. B). The larvae or caterpillar is easily recognized by its bright red head and velvety black back, bordered with yellowish stripes. Four conspicuous tufts of cream colored hair are found growing straight up on the dorsal aspect of the abdominal segments and a pair of long black pencil-like plumes extend forward from the head at an angle from the body and

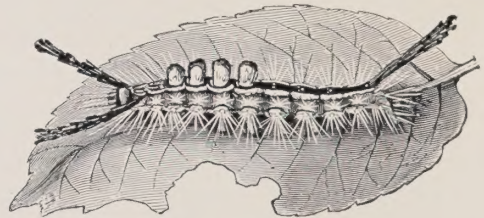


FIG. B

a single one extends back from the posterior end of the body.

When first hatched the young larvae migrate to the under side of the leaves, where they feed upon the chlorophyll or green matter of the leaf, often completely defoliating the tree.

After the larvae are about four weeks old they begin to migrate to the crevices of the tree trunk, to fences, walls, porches, eaves, and other protected places. Here they spin cocoons composed of silky threads, which are easily distinguished, and in these the insect



Many insect pests infest the caterpillars and do much toward controlling this pest, while our native birds, wherever they exist, feed upon the young larvae.

Spraying the young foliage early in the spring with arsenate of lead, in proportions of four pounds of lead to fifty gallons of water, is one of the best methods of combating this pest. This insecticide must be carefully applied and thoroughly understood.

Citizens can do a great deal individually by destroying the larvae at this time and the egg masses later in the fall. This can easily be accomplished by squashing or crushing the pupa which are hidden in the cocoons and by gathering the egg masses and burning them. The crushing can be done by poking a stick against the conspicuous cocoons or by using long poles, where the cocoons are up in the trees. This is the most simple and economical method of combating the pest. Where a tree has been cleared of the egg masses and caterpillars re-infestation may, in a great measure, be prevented by placing a band of "tanglefoot" or cotton batting around the trunk, for the insect can only spread while in the larvae stage.

"Tree-dopes" and "Cure-alls" should be avoided. Spraying is not essential to the growth and development of the tree and should not be resorted to unless conditions become serious.

Trees well fertilized with bone meal or wood ashes each spring or given a dressing of barn-yard manure in the winter and frequent watering during the months of June, July and August will greatly improve the trees in appearance and enable them to ward off insect pests.

The Special Park Commission has had men at work scraping off the egg masses and cocoons with steel wire brushes, but the appropriation has been too small to accomplish material results.



FIG. D



FIG. C

## THE COTTONY MAPLE SCALE

(*Pulvinaria Innumerabilis*)

### Its Life History and Habits and Methods of Extermination

This insect pest is commonly found on the soft maples, box elders, American lindens, willows, locusts—and in some instances on elms. It is also found on some shrubs, the sumac for example, and upon vines—the wild grape and woodbine.

Ordinarily a strong, healthy tree—well fertilized and growing under favorable environment—can withstand considerable sapping from this pest, but where this insect is as abundant as it is in and about Chicago, working on trees called upon to grow under the most adverse circumstances, they are sure to gradually destroy the tree.

**Life History:** The pest is very conspicuous when in its mature stage. The female can easily be seen fastened to the under side of the twigs. They appear as a brownish blister, under which a cottony mass begins to form, which gradually increases until it is about the size of a white bean. These are the egg masses, or ovisacs, produced by the female in the spring and early summer. These egg masses contain from 200 to 2,000 minute greenish spherical eggs. These eggs ordinarily begin to hatch about the middle of June, but early hot weather this season has favored their development.



FIG. A



The hatching depends upon the conditions of the weather. Hot weather and direct sunlight favor the development. Thus the eggs found upon trees with dense foliage hatch egg masses of the Cottony Maple Scale much later than those upon trees with less foliage.

The young lice-like larvae, after hatching, migrate to the leaves, preferably to the under side, where they lodge along the midribs and veins. Here they penetrate the tissues of the leaf with their thread-like beaks and suck the protoplasm or life sap from the tree. Thus the entire branch upon which these young feed will be killed during one season. This is why the soft maples infested with the insect contain so much dead wood. Later in the season the larvae return to the twigs, become permanently attached, push their beaks into the soft tissues of the twigs and in the following spring the females again become active, sucking the sap from the twigs and produce the new egg masses.

This insect is a native species, probably having always been present in this country. Sporadic outbreaks have appeared in different parts from time to time, which have been controlled by its natural enemies, the birds and other insects.

The local climate and ready food supply seem to favor the cottony maple scale. However, it has been found that several insects are aiding in the destruction of this pest. Among these larvae the "twice stabbed lady beetle" (*hyperaspis binotata*) is most active. It feeds upon the eggs of the cottony scale and seems to be multiplying at a rapid rate.

So care must be taken not to destroy the lady beetle, but encourage its life and activities wherever possible.

**Remedies:** Trim and burn off the infested twigs in the winter and early spring—in this way many thousands of egg masses can be destroyed.

Take the garden hose and syringe the trees after the eggs have begun to hatch. In this way you kill force thousands of the young off the trees. Sometimes a sponge, fastened to the end of a pole, saturated with kerosene oil and rubbed against the egg masses will destroy them.

Spraying with kerosene emulsion in the spring and early summer will kill the young lice as they are crawling over the branches and leaves.

For summer treatment a solution of kerosene emulsion is made by using one pound of soap—dissolved in one gallon of warm water; to this is added two gallons of kerosene. This mixture must be thoroughly agitated so that no globules of oil will be seen floating upon the surface of the mixture. The mixture is then diluted with twenty gallons of water, making a 10% solution. In case this burns the leaves, add more water.



EGG MASSES ON TREES



The best time to spray is in the winter with a 20 to 25 per cent solution of kerosene emulsion or a lime sulphur spray. By spraying in the winter there is no danger of killing the friendly lady beetle. Also the least possible number of insects that can survive the winter is then concentrated on the tree. Only one spraying is necessary, while in the summer it is necessary often to spray twice or three times to obtain beneficial results.

The spraying can be done much easier and at less inconvenience in the winter. Where there are only a few shrubs, vines or small trees, this spraying can be done by using a small bucket pump or the pests may be picked off and destroyed.

Where Improvement Associations and citizens co-operate a large barrel outfit can be secured and by each citizen contributing a small amount, wholesale spraying can be effectively done.

Any further advice and suggestion will be given by applying to

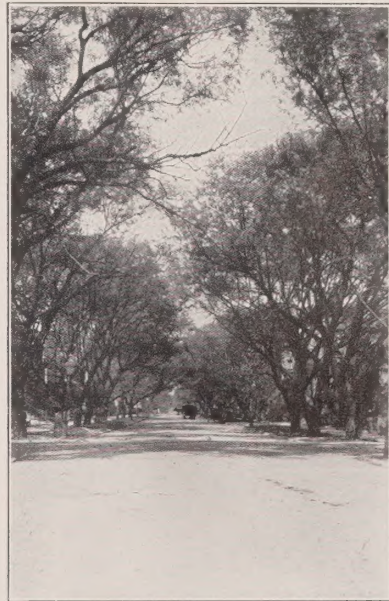
THE SPECIAL PARK COMMISSION,

WALTER WRIGHT, Secretary.

A. W. BEILFUSS, Chairman.



SAVING A TREE IN THE ROADWAY



WILLOWS IN NEED OF TRIMMING





C101743350

# SHADE TREE COMMISSION

OF NEWARK—NEW JERSEY

## SPECIFICATIONS ADOPTED FOR THE SELECTION OF TREES

TREES WHICH DIE  
ARE REPLACED  
WITHOUT CHARGE

OUR TREES ARE PRUNED  
SPRAYED AND FED  
REGULARLY BY TRAINED  
HORTICULTURISTS

